

**Laboratory** MTMS Engineers Private Limited, Narsinh Residency, Flat No. B-4,  
1st Floor, Survey No. 81/2A/1A, Main Road, New Sangvi, Pune,  
Maharashtra

**Accreditation Standard** ISO/IEC 17025: 2005

**Certificate Number** CC-2293

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**Validity** 06.12.2017 to 05.12.2019

**Last Amended on** -

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability ( $\pm$ )	Remarks
<b><u>MECHANICAL CALIBRATION</u></b>				
<b>I. DIMENSION (PRECISION INSTRUMENTS)</b>				
1.	Profile Projector * Angular Scale Magnification XY Travel	Upto 360 <sup>0</sup> Upto 200 X 0 to 250 mm	35 min of arc 0.72 % 13.0 $\mu$ m	Using Glass Scale, Angular Gauges & Dial Caliper as per JIS B 7184 by Comparison Method
2.	Microscope *	Upto 1000 X	2 %	Using Glass Scale & Dial Caliper as per ASTM E-1951
3.	Extensometer * (Clip-On Type, Video & Laser Extensometer)	Upto 20 mm	8.2 $\mu$ m	Using Electronic Probe With DRO And Extensometer Calibration Fixture as per 12872, ISO 9513 & ASTM E 83
<b>II. HARDNESS TESTING MACHINES</b>				
1.	Verification Of Indentation Measuring System Of Brinell & Vickers Hardness Testing Machine *	Upto 7 mm	0.72 %	Using Glass Scale as per IS 1500, ISO 6506, IS 1501, ISO 6507, ASTM E 10 ASTM E 384 & ASTM E 92

**Ram Ashray**  
Convenor

**Avijit Das**  
Program Director

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2.	Rockwell & Rockwell Superficial Hardness Tester By Indirect Method *	HRA	0.50 HRA	Using Standard Hardness Test Block as per IS 1586 & ISO 6508-2 & ASTM E - 18
		HRBW	0.70 HRBW	
		HRC	0.50 HRC	
		HRFW	0.35 HRFW	
		HR 15 N	0.70 HRN	
		HR 30 N	0.80 HRN	
		HR 45 N	0.75 HRN	
		HR 15 TW	0.50 HRTW	
		HR 30 TW	0.75 HRTW	
		HR 45 TW	0.80 HRTW	
		HRLW	1.1 HRLW	
		HREW	0.8 HREW	
		HRD	1.0 HRD	
		2.5 / 31.25 HBW	4.6 %	
		2.5 / 62.5 HBW	2.5 %	
		2.5 / 187.5 HBW	2.8 %	
		5 / 250 HBW	2.5 %	
		5 / 750 HBW	2.1 %	
		10 / 500 HBW	1.6 %	
		10 / 1000 HBW	2.5 %	
		10 / 3000 HBW	2.0 %	
		2.5 / 15.625 HBW	1.6 %	
1 / 30 HBW	1.1 %			
		HV 1	2.2 %	
		HV 3	2.5 %	
		HV 5	1.7 %	
		HV 10	1.3 %	
		HV 20	2.0 %	
		HV 30	1.2 %	
		HV 50	1.8 %	
HV 100	1.1 %			

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5.	Verification Of Micro-Vickers Hardness Tester By Indirect Method *	HV 0.1	1.5 %	Using Standard Hardness Test Blocks, as per IS 1501, ISO 6507 & ASTM E 384
		HV 0.2	3.37 %	
		HV 0.3	1.9 %	
		HV 0.5	1.3 %	
6.	Verification Of Leeb (Dynamic) Hardness Tester By Indirect Method *	D Scale	11.0 HLD	Using Standard Hardness Test Blocks as per ASTM A 956
7.	Verification of Durometer §	Shore A & Shore D	0.84 %	Using Durometer Calibrator as per ASTM D 2240 & ISO 18898
<b>III.</b>	<b>IMPACT TESTING MACHINE</b>			
1.	Charpy Impact Testing Machine *	Up to 750 J	0.77 %	Using Clinometer, Master Load Cell, Height Gauge, as per ASTM E 23 & IS 3766, ISO 148(2)
2.	Izod Impact Testing Machine *	Upto to 750 J	1.6 %	Using Clinometer, Master Load Cell, Height Gauge as per BS 131 Part 4 & IS 3766
3.	Charpy & Izod Plastic Impact Testing Machine *	Upto 50 J	0.90 J	Using Clinometer, Master Load Cell, Height Gauge as per ISO 13802, ASTM D 256, ASTM D 6110

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<b>IV.</b>	<b>PRESSURE INDICATING DEVICES</b>			
1.	Pressure Hydraulic - Dial / Digital Pressure Gauge, Pressure Transducer *	0 to 700 bar	0.8 % rdg	Using Digital Pressure Gauge as per DKD-R-6-1 and NABL 122 - 13
<b>V.</b>	<b>WEIGHING SCALE AND BALANCE</b>			
		1 mg to 200 g (LC – 1 mg & above)	1.2 mg	
		200 g to 3 kg (LC – 0.1 g & above)	0.13 g	
		3 kg to 20 kg (LC-1g & above)	1.16 g	Using Calibration of Electronic Weighing Balances of Class III And Coarser, as per OIML R 76 -1 & NABL 122 – 03
<b>VI.</b>	<b>UTM, TENSION CREEP AND TORSION TESTING MACHINE</b>			
1.	Verification Force Measuring System Of Uniaxial Testing Machine* Tension	4 N to 100 N 100 N to 1000 kN	0.46 % 0.35 %	Using Dynamometers & load cell with Indicator, as per 1828 Part 1 & ISO 7500 – 1
	Compression	4 N to 100 N 20 N to 3000 kN	0.25 % 0.30 %	

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Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability ( $\pm$ )	Remarks
2.	Verification Force Measuring System Of Uniaxial Testing Machine* (Class A Only) Compression Tension	4 N to 3000 kN Up to 1000 kN	0.20 % 0.44 %	Using Dynamometers & Load Cell With Indicator, as per ASTM E 4 (Class A)
3.	Verification Force Measuring System Of Uniaxial Testing Machine In Reverse Direction Compression *	Up to 3000 kN	0.36 %	Using Dynamometers & load cell with Indicator, as per 1828 Part 1 & ASTM E 4 (Class A)
4.	Test Force Of Rockwell & Rockwell Superficial Hardness Tester*	29.42 N to 1471 N	0.18 %	Using Dynamometers & Load Cell with Indicator as per IS 1586, ISO 6508-2, ASTM E 18
5.	Test Force Of Brinell Hardness Tester *	61.29 N to 29421 N	0.20 %	Using Dynamometers & Load Cell with Indicator as per IS 1500, ISO 6506-2, ASTM E 10
6.	Test Force Of Vickers Hardness Tester *	2.942 N to 980.7 N	0.40%	Using Dynamometers & load cell with Indicator as per IS 1501, ISO 6507-2, ASTM E 384, ASTM E 92
7.	Verification Of Cross Head Of Uniaxial Testing Machine * Force Displacement	Up to 500 mm	0.90 mm	Using Liner Scale with DRO as per ASTM E 2309

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8.	Verification Of Depth Measuring System Of Rockwell Hardness Tester*	0 to 0.2 mm	2 $\mu$ m	Using Depth Measuring Calibrator as per IS 1586 & ISO 6508 – 2 & ASTM E 18
9.	Verification Of Testing Cycle Of All Types Of Hardness Tester*	Up to 180 sec	1.0 Sec	Using Stop watch as per IS 1586 & ISO 6508 – 2 & ASTM E 18 / IS 1500 & ISO 6506 & ASTM E 10 / IS 1501 & ISO 6507 & ASTM E 384 & ASTM E 92
10.	Erichsen Cupping Testing Machine*	Up to 20 mm	0.06 mm	By Comparison Method IS 10175 – Part 1
11.	Verification Of Speed Of Cross Head Of Uniaxial Testing Machine*	0 to 500 mm/min	2.0 mm/min	Using Displacement Calibrator And Stop Watch as per ASTM E 2658
12.	Push Pull Tester <sup>§</sup>	0 to 1000 N	0.5 %	Using Push Pull Gauge Calibration Machine as per VDI / VDE-2624
<b>VII.</b>	<b>DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)</b>			
1.	Caliper <sup>§</sup> (Dial, Digital & Vernier) L.C.: 0.01 mm <sup>φ</sup>	0 to 300 mm 0 to 600 mm	16.0 $\mu$ m 17.0 $\mu$ m	Using Caliper Checker, Gauge Blocks as per IS 3651 by Comparison Method

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2.	Height Gauge <sup>§</sup> (Dial, Digital & Vernier) L.C.: 0.01 mm $\phi$	0 to 300 mm 0 to 600 mm	17.0 $\mu$ m 18.0 $\mu$ m	Using Caliper Checker, Gauge Blocks, Surface Plate as per IS 2921 by Comparison Method
3.	Depth Gauge <sup>§</sup> (Dial, Digital & Vernier) L.C.: 0.01 mm $\phi$	0 to 150 mm	12.00 $\mu$ m	Using Gauge Blocks, Surface Plate as per IS 4213 by Comparison Method
4.	Micrometer <sup>§</sup> (External) L.C.: 0.001 mm $\phi$	0 to 150 mm	2.9 $\mu$ m	Using Gauge Blocks as per IS: 2967 by Comparison Method
5.	Dial Gauge <sup>§</sup> (Plunger Type) L.C.: 0.001 mm $\phi$	0 to 25 mm	3.75 $\mu$ m	Using Dial Calibration Tester, Gauge Blocks, Electronic Probe as per IS 2092 by Comparison Method
6.	Bore Gauge Transmission <sup>§</sup> L.C.: 0.01 mm $\phi$	0 to 1.2 mm	4.1 $\mu$ m	Using Dial Calibration Tester as per JIS B 7515 Comparison Method
7.	Thickness Gauge <sup>§</sup> L.C.: 0.001 mm $\phi$	0 to 10 mm	6.00 $\mu$ m	Using Gauge Blocks By Comparison Method
8.	Micrometer Setting Rod <sup>§</sup>	0 to 125 mm	3.2 $\mu$ m	Using Electronic Probe, Gauge Blocks, Comparator Stand By Comparison Method
9.	Feeler Gauge <sup>§</sup>	0 to 1 mm	2.2 $\mu$ m	Using Electronic Probe, Comparator Stand as per IS 3179

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10.	Plain Plug Gauge <sup>§</sup>	0 to 125 mm	3.2 $\mu$ m	Using Electronic Probe, Comparator Stand as per IS 3455
11.	Snap Gauge <sup>§</sup>	0 to 150 mm	3.00 $\mu$ m	Using Gauge Blocks as per IS 3455
12.	Depth Micrometer <sup>§</sup> L.C. : 0.01 mm <sup>φ</sup>	0 to 150 mm	11.3 $\mu$ m	Using Gauge Blocks, Surface Plate By Comparison Method
13.	Lever Type Dial Gauge <sup>§</sup> L.C. : 0.01 mm <sup>φ</sup>	0 to 1 mm	3.75 $\mu$ m	Using Dial Calibration Tester, as per IS 11498
14.	Electronic Probe <sup>§</sup>	0 to 25 mm 0 to 60 mm	1.1 $\mu$ m	Using Gauge Blocks, Comparator Stand By Comparison Method
15.	Surface Plate <sup>*</sup>	3000 (L) x 3000 (W)	$3.2 \sqrt{\frac{L+W}{75}}$ $\mu$ m	Using Electronic level as per IS 12937 By Comparison Method

\* Measurement Capability is expressed as an uncertainty ( $\pm$ ) at a confidence probability of 95%

<sup>§</sup>Only in Permanent Laboratory

<sup>\*</sup>Only for Site Calibration

<sup>φ</sup> Laboratory can also calibrate instruments/devices of coarser resolution / least count within the accredited range using same reference standard/ master equipment under the scope of accreditation.

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